

TAXONOMY OF *VARILLA* (ASTERACEAE: HELIANTHEAE)

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ABSTRACT

A taxonomic treatment of *Varilla* is rendered. Two species are recognized, *V. mexicana* and *V. tezana*, the former having two varieties, one of these, *Varilla mexicana* var. *gypsophila* B. Turner, is newly described. Both species occur in northeastern México, *V. tezana* also occurring in adjacent Texas. Illustrations and distribution maps for both species are provided.

KEY WORDS: *Varilla*, Asteraceae, Heliantheae, México.

The genus *Varilla* was first established by Asa Gray with his description of *V. mexicana* from collections obtained by Dr. Wislizenus in northeastern Durango and Dr. Gregg in southernmost Coahuila. Gray subsequently added a second, very different species, *V. tezana*, based on collections made by Charles Wright in Texas. In the present paper, with the description of *V. mexicana* var. *gypsophila*, I have added a third taxon to the genus, a rather distinct regional element largely confined to gypseous soils of west central Coahuila.

CHROMOSOME NUMBERS

All of the taxa have been investigated chromosomally, and all have chromosome numbers of $n = 18$ pairs. References to these are provided below. It is my assumption that the haploid number, $n = 18$, is of ancient origin, probably a polyploid on an ancestral base of $x = 9$.

GENERIC RELATIONSHIPS

Turner & Powell (1977) have discussed the likely relationships of *Varilla*, concluding that it belongs to the tribe Heliantheae, in the subtribe Varillinae along with several other genera, in particular *Clappia* ($x = 16$), *Pseudoclappia* ($x = 18$) and perhaps the anomalous genera *Bebbia* ($x = 9$) and *Dyscritothamnus* ($x = ?$). In short, they felt that *Varilla* represented an ancestral "prototype" from which these several genera might have arisen, all or most of them occurring in dry, mostly saline habitats of northern México. Robinson (1981) accepted the subtribal position of *Varilla*, but positioned both *Clappia* and *Pseudoclappia* as the only members of a newly erected, but closely related, subtribe Clappiinae. He correctly noted that *Bebbia* and *Dyscritothamnus* are "unquestionably members of the Galinsoginae and are not closely related to *Varilla* ...".

TAXONOMY

Varilla A. Gray, Mem. Amer. Acad. Arts 4:106. 1849. Type species: *Varilla mexicana* A. Gray.

Shrubs or succulent shrublets 0.5-3.0 m high. Stems glabrous or nearly so, brittle and erect or recumbent and subsucculent or fleshy. Leaves alternate or mostly opposite, filiform and succulent or linear lanceolate and flattened, often with punctate glands. Heads discoid, 5-50 in terminal subfasciculate cymes, or solitary and terminal, borne on elongate peduncles. Involucres turbinate to hemispheric, 4-8 seriate, markedly imbricate to subimbricate, the bracts ovate lanceolate to lanceolate, glabrous, well bestowed with oil bearing striations or raised linear ducts. Receptacle ovoid or conical, paleate, the pales like the involucral bracts. Ray florets absent. Disk florets numerous, yellow, the throat tubular with orange, oil bearing, ducts or striations. Achenes prismatic or columnar, black, with 7-9 ribs, the pappus absent or of a few short bristles. Base chromosome number, $x = 18$.

KEY TO SPECIES

1. Low succulent shrublets with recumbent stems to 50 cm high; leaves mostly alternate, narrowly terete, ca. 1 mm wide *V. texana*

1' Erect nonsucculent shrubs 0.7-3.0 m high; leaves mostly opposite, linear lanceolate, flattened, mostly 2-10 mm wide *V. mexicana*

Varilla mexicana A. Gray, Mem. Amer. Acad. Arts 4:106. 1849. Figure 1.
TYPE: MÉXICO. Durango: between Pelayo and Cadena, without date,
Dr. Wislizenus 275 (LECTOTYPE [selected here]: GH!).

The protologue lists two collections, the above and "Valley east of Parras, *Dr. Gregg*; April." Both are mounted on a single sheet at GH and both fall within the concept of the typical variety as conceived here (Figure 1). The lectotype is the better preserved of the two collections, containing both flower and fruiting material, matching closely the description provided by its author.

Shrubs 1-3 m high. Stems glabrous, brittle, with age the bark somewhat corky; leaves mostly opposite, those of primary shoots linear, mostly 7-8 cm long, 2-4(-5) mm wide, glabrous, the apices gradually narrowed to very slender apices. Heads 5-15 in terminal corymbs, the ultimate peduncles mostly 5-15 mm long. Involucre, in fruit, decidedly turbinate, somewhat higher than wide, 5-6 mm high, the bracts 1-2 seriate, subgraduate, linear lanceolate, with 1-2 orange linear ducts adorning the dorsal surfaces, similar to and grading into the receptacular pales. Florets numerous, the corollas 3.5-5.0 mm long, yellow, the tube ca. 1.5 mm long, sparsely glandular pubescent, the throat abruptly tubular, 1.5-3.0 mm long, the lobes ca. 0.75 mm long. Achene 2-3 mm long, 8-9 ribbed, black at maturity, sparsely pubescent with crinkly hairs, the pappus of 5-8 poorly developed awns 0.2-0.7 mm long, sometimes epappose. Chromosome number, $n = 18$ pairs (Turner & Flyr 1966).

Two varieties of this species are recognized; these are contrasted in the following couplet.

1. Achenes 1.5-1.9 mm long, glabrous or nearly so; leaves of primary shoots mostly 4-8 mm wide; mostly growing on gypseous soils . var. *gypsophila*
- 1' Achenes 2.0-3.9 mm long, to some extent pubescent; leaves of primary shoots mostly 2-4 mm wide; mostly growing on calcareous soils var. *mexicana*

Varilla mexicana A. Gray var. *gypsophila* B. Turner, var. nov. TYPE: MÉXICO. Coahuila: ca. 85 air miles W of Cuatro Ciénegas, ca. 2 miles S of Salinas del Rey del Norte, on NW side of Laguna del Rey; on gypsum sand above lake, 1050 m, 19 Sep 1974, *James Henrickson 1414* (HOLOTYPE: LL; Isotype: MEXU).

Varilla mexicana var. *mexicana* similis sed acheniis brevioribus plerumque glabrisque, surculis primariis foliis latioribus, et habitationibus in terris gypсорum differt.



FIG. 1. *VARILLA MEXICANA* VAR. *MEXICANA* (POWELL 1867, TEX).

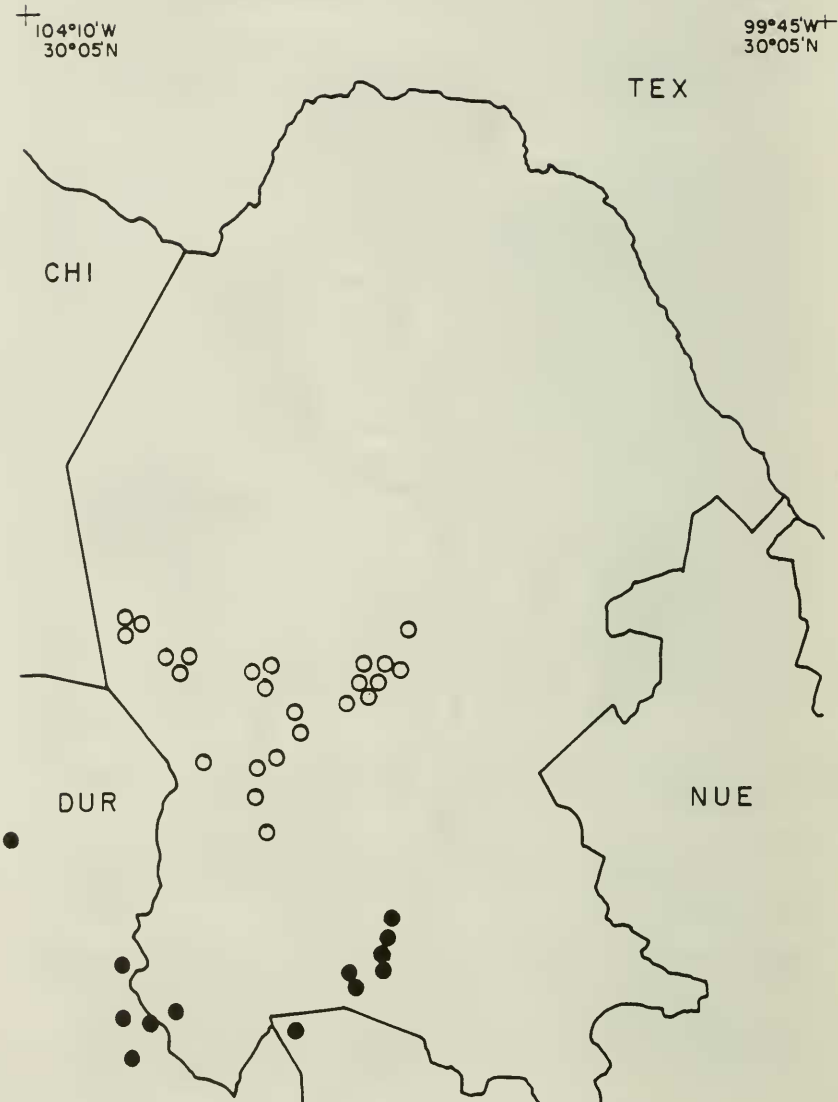


FIG. 2. DISTRIBUTION OF *VARILLA MEXICANA*: VAR. *MEXICANA* (●); VAR. *GYPSOPHILA* (○).

DISTRIBUTION (Figure 2): west central Coahuila, mostly gypseous alluvial or sand blown soils, 700-1400 m; flowering all seasons.

The taxon is largely confined to gypseous soils, being especially common on the gypseous dunes in the vicinity of Cuatro Ciénegas. As indicated in Figure 2, the two varieties are not known to occur together, but an occasional intermediate between the two taxa may be found, although most such plants are probably late flowering specimens of var. *gypsophila* in which the leaves of secondary shoots become narrower, or else these are late flowering specimens of var. *mezicana* in which the heads become somewhat smaller and possess somewhat shorter, less pubescent achenes.

REPRESENTATIVE SPECIMENS: MÉXICO. Coahuila: Bacon & Leverich 1258 (TEX); Chiang, et al. 9511c (LL); Gieschen s.n. (TEX); Henrickson 6027 (LL); Henrickson 12108 (LL); Henrickson 12224 (LL); Henrickson 12254 (LL); Henrickson 12513 (LL); Henrickson 12550 (LL); Henrickson & Lee 15904 (TEX); I.M. Johnston 7819 (GH); I.M. Johnston 8690 (GH, LL); M.C. Johnston, et al. 10337 (LL); M.C. Johnston, et al. 10349 (LL); M.C. Johnston, et al. 10375 (LL); M.C. Johnston, et al. 12163 (LL); M.C. Johnston, et al. 12178 (LL); Leverich & Turner 1 (TEX); Marroquin 1087 (TEX); Nesom, et al. 5237 (TEX); Pinkava 5260 (LL); Powell & Turner 2239 (TEX); Purpus 4463 (GH); Stewart 2657 (GH); Turner 6195 (TEX); Wendt & Lott (LL).

Varilla mezicana A. Gray var. *mezicana* Figure 1.

As described in the above account, the variety *gypsophila* not included; chromosome number, $n = 18$ pairs (Powell & Powell 1977).

DISTRIBUTION (Figure 2): northeastern Durango and closely adjacent southern Coahuila and northwestern Zacatecas, pine-oak-juniper woodlands in calcareous soils, 1300-2000 m; flowering all seasons.

In his description, Gray noted the lectotype to have been collected in the state of Chihuahua. The localities given, however, are both from Durango. Indeed, I have not seen collections of *Varilla mezicana* from Chihuahua, although it occurs close to that state in west central Coahuila.

REPRESENTATIVE SPECIMENS: MÉXICO. Coahuila: González 310 (TEX); Gregg s.n. (GH); Palmer 680 (GH); Pringle 42 (GH, LL); Pringle 310 (TEX); Rodríguez & Carranza 2368 (TEX); Rodríguez & Carranza 2404 (TEX); Shreve & Tinkham 9852 (GH, LL); Thurber 855 (GH). Durango: Flyr 146 (TEX); M.C. Johnston, et al. 10991 (LL); Powell & Turner 1867 (TEX); Turner 15049 (TEX). Zacatecas: M.C. Johnston, et al. 11521 (LL).

Varilla tezana A. Gray, *Pl. Wright.* 1:133. 1852. Figure 3. TYPE: UNITED STATES. Texas: "Saline plains, from the Nueces to the Rio Grande, Texas; Sept." Wright s.n. (LECTOTYPE (selected here): GH!).



FIG. 3. VARILLA TEXANA (LEVERICH 22, TEX.).

In the protologue a collection by M. Trecut from the same district is also cited; I have designated the Wright collection as lectotype.

Low succulent shrublet to 50 cm high, the stem sarcose and recumbent; leaves narrowly terete, succulent. 15-30 mm long, 0.5-1.5 mm wide; heads solitary, terminal, on peduncles 10-20 cm long; receptacles ovoid, 1.8-2.0 times as long as wide (ca. 9 mm high, 4-5 mm wide); disk florets 200+; achenes columnar, black, epappose; chromosome number, $n = 18$ pairs (Powell & Turner 1963).

A very distinct species often forming relatively "pure" stands in saline river bottoms. The species has been amply described by a number of workers.

DISTRIBUTION (Figure 4): Southernmost Texas and adjacent northern México in saline flats, 10-200 m; flowering all seasons.

REPRESENTATIVE SPECIMENS: UNITED STATES. Texas: Dimmit Co., *Correll & Johnston* (LL). Hidalgo Co., *Clover* (LL). Maverick Co., *Seigler, et al. 1401* (TEX). Starr Co., *Wood 745* (TEX). Webb Co., *Correll & Johnston 19744* (LL). Zapata Co., *Correll 35441* (LL). Zavala Co., *Shinners 7386* (LL).

MÉXICO. Nuevo León: *Barkley 14350* (LL); *Garcia 75* (TEX); *Johnston 4361* (TEX), *Johnston 5012* (TEX); *Johnston & McMillan 6070* (TEX); *Johnston & McMillan 6072* (TEX); *Leverich & Turner 22* (TEX); *Nesom 6815* (TEX); *Smith M644* (TEX). Tamaulipas: *Heard 4* (LL, TEX); *Johnston 4340* (TEX).

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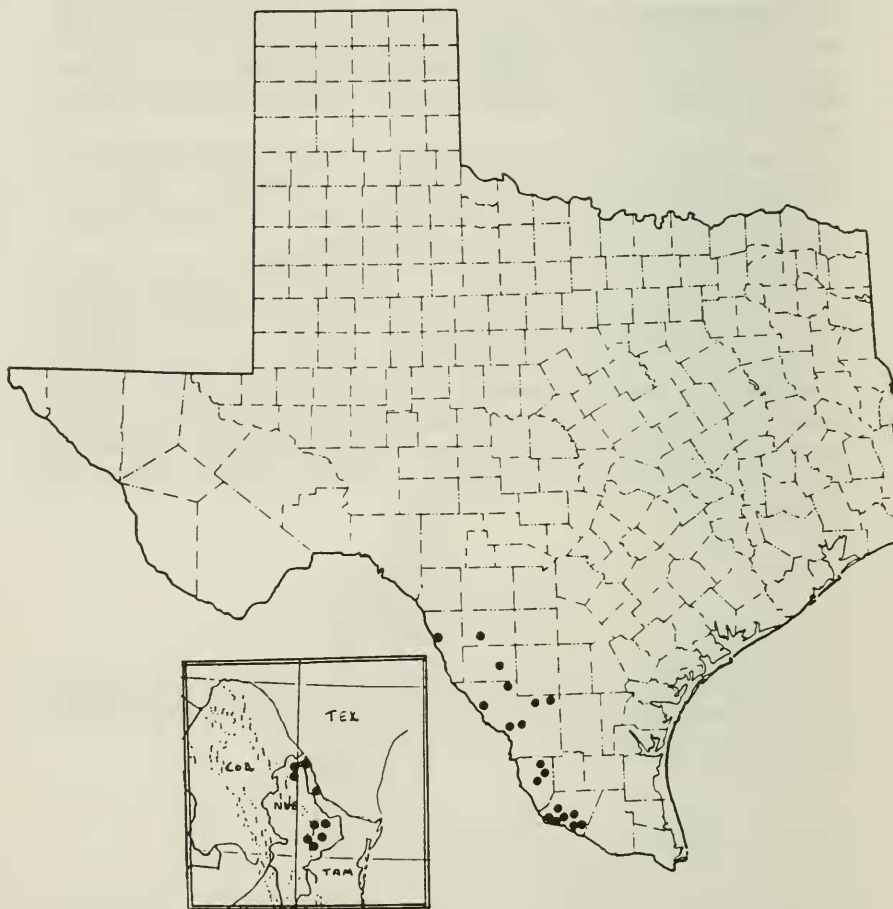


FIG. 4. DISTRIBUTION OF *VARILLA TEXANA* IN TEXAS AND IN MEXICO (INSET).

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